

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Original) A method in a computer system for PKI-enabling an application, the method comprising:

integrating the application with an application-specific certification authority for issuing application-specific certificates;

receiving notice of a master certification authority issuing a master certificate to a subscriber; and

issuing to the subscriber an application-specific certificate corresponding to the master certificate, the application-specific certificate for use by the application.

2. (Original) The method of claim 1, further comprising:

integrating the application with a directory service for providing access to application-specific certificates for the application.

3. (Original) The method of claim 2, wherein the directory service comprises one of a lightweight directory access protocol (LDAP) service, an X.500 directory, and a database.

4. (Original) The method of claim 2, wherein the directory service comprises a certificate repository, and wherein issuing comprises:

storing the application-specific certificate in the certificate repository of the directory service.

5. (Original) The method of claim 1, further comprising:

receiving notice of the master certification authority revoking the master certificate of the subscriber; and

revoking the application-specific certificate of the subscriber corresponding to the revoked master certificate.

6. (Original) The method of claim 5, wherein revoking comprises:  
storing an indication of the revoked application-specific certificate in a certificate revocation list.
7. (Original) The method of claim 1, further comprising:  
integrating the application with a registration authority for registering subscribers and revoking subscribers' certificates;  
in response to a subscriber being registered, issuing an application-specific certificate to the subscriber; and  
in response to a subscriber's certificate being revoked, revoking the application-specific certificate of the subscriber.
8. (Original) The method of claim 1, wherein the master certificate and the application-specific certificate are each associated with a separate public key and a separate private key, and wherein issuing comprises:  
encrypting the private key associated with the application-specific certificate using the public key associated with the master certificate.
9. (Original) The method of claim 8, further comprising:  
in response to the subscriber successfully authenticating with an authentication service using the master certificate:  
decrypting the private key associated with the application-specific certificate using the private key associated with the master certificate; and  
authenticating the subscriber for the application using the decrypted private key associated with the application-specific certificate.

10. (Original) A method in a computer system for PKI-enabling a plurality of applications, the method comprising:

integrating a first application with a first certification authority for issuing certificates specific to the first application;

integrating a second application with a second certification authority for issuing certificates specific to the second application;

receiving notice of a registration authority registering a subscriber;

issuing a first application-specific certificate to the subscriber using the first certification authority, the first application-specific certificate for use by the first application; and

issuing a second application-specific certificate to the subscriber using the second certification authority, the second application-specific certificate for use by the second application.

11. (Original) The method of claim 10, further comprising:

integrating the first application with a first directory service for providing access to application-specific certificates for the first application.

12. (Original) The method of claim 11, wherein the first directory service comprises a certificate repository, and wherein issuing a first application-specific certificate comprises:

storing the first application-specific certificate in the certificate repository of the first directory service.

13. (Original) The method of claim 10, further comprising:

receiving notice of the registration authority revoking a certificate of the subscriber;

revoking the first application-specific certificate of the subscriber using the first certification authority; and

revoking the second application-specific certificate of the subscriber using the second certification authority.

14. (Original) The method of claim 13, wherein revoking the first application-specific certificate comprises:

storing an indication of the revoked application-specific certificate in a certificate revocation list.

15. (Original) The method of claim 10, further comprising:

integrating the first application with an application-specific registration authority for registering subscribers; and

in response to a subscriber being registered by the application-specific registration authority, issuing an application-specific certificate to the subscriber using the first certification authority.

16. (Original) The method of claim 11, further comprising:

integrating the second application with a second directory service for providing access to application-specific certificates for the second application.

17. (Original) The method of claim 16, wherein the second directory service comprises a certificate repository, and wherein issuing the second application-specific certificate comprises:

storing the second application-specific certificate in the certificate repository of the second directory service.

18. (Original) The method of claim 10, further comprising:

integrating the second application with an application-specific registration authority for registering subscribers; and

in response to a subscriber being registered by the application-specific registration authority, issuing an application-specific certificate to the subscriber using the second certification authority.

19. (Original) A method in a computer system for PKI-enabling a plurality of applications, the method comprising:

integrating each of a plurality of applications with an application-specific certification authority, the application-specific certification authority for issuing application-specific certificates;

receiving notice of a registration authority registering subscribers; and

issuing a corresponding application-specific certificate to each subscriber registered by the registration authority.

20. (Original) The method of claim 19, further comprising:

receiving notice of the registration authority revoking certificates of one or more subscribers; and

revoking the application-specific certificate of each subscriber for which a corresponding certificate was revoked by the registration authority.

21. (Original) A system for PKI-enabling an application, the system comprising:

an application-specific certification authority integrated with the application, the application-specific certification authority configured to issue an application-specific certificate to a subscriber in response to receiving notice of a master certification authority issuing a master certificate to the subscriber, the application-specific certificate for authenticating the subscriber for the application; and

a directory service integrated with the application and configured to provide access to application-specific certificates for the application.

22. (Original) The system of claim 21, wherein the directory service comprises one of a lightweight directory access protocol (LDAP) service, an X.500 directory, and a database.
23. (Original) The system of claim 21, wherein the directory service comprises a certificate repository for storing certificates specific to the application.
24. (Original) The system of claim 21, wherein the application-specific certification authority is further configured to revoke the subscriber's application-specific certificate in response to receiving notice of the master certification authority revoking the master certificate of the subscriber.
25. (Original) The system of claim 24, wherein the directory service comprises a certificate revocation list for storing an indication of the revoked application-specific certificate.
26. (Original) The system of claim 21, further comprising:  
an application-specific registration authority integrated with the application for registering subscribers and, in response to a subscriber being registered, instructing the first certification authority to issue an application-specific certificate to the subscriber, and, in response to a subscriber's certificate being revoked, instructing the first certification authority to revoke the application-specific certificate of the subscriber.
27. (Original) The system of claim 21, wherein the master certificate and application-specific certificate are each associated with a separate public key and a separate private key, the system further comprising:  
an encryption module configured to encrypt the private key associated with the application-specific certificate using the public key associated with the master certificate.
28. (Original) The system of claim 27, further comprising:

a decryption module configured to decrypt the private key associated with the application-specific certificate using the private key associated with the master certificate in response to a subscriber successfully authenticating with an authentication service of the master certification authority using the master certificate and corresponding private key; and

an authentication module configured to authenticate a subscriber for the application using the decrypted private key associated with the application-specific certificate.

29. (Original) A system for PKI-enabling a plurality of applications, the system comprising:  
a first certification authority integrated with a first application, the first certification authority for issuing a first application-specific certificate to a subscriber in response to receiving notice of a registration authority registering the subscriber, the first application-specific certificate for use by the first application; and

a second certification authority integrated with a second application, the second certification authority for issuing a second application-specific certificate to a subscriber in response to receiving notice of the registration authority registering the subscriber, the second application-specific certificate for use by the second application.

30. (Original) The system of claim 29, further comprising:  
a first directory service integrated with the first application for providing access to application-specific certificates for the first application.

31. (Original) The system of claim 30, wherein the first directory service comprises a certificate repository for storing certificates specific to the first application.

32. (Original) The system of claim 29, wherein the first certification authority is further configured to revoke the first application-specific certificate of the subscriber in response to receiving notice of the registration authority revoking a certificate of the subscriber.

33. (Original) The system of claim 32, further comprising:

a first directory service integrated with the first application for providing access to application-specific certificates for the first application, wherein the first directory service comprises a certificate revocation list for storing an indication of the revoked application-specific certificate.

34. (Original) The system of claim 29, further comprising:

an application-specific registration authority integrated with the first application for registering a subscriber and, in response to the subscriber being registered, instructing the first certification authority to issue an application-specific certificate to the subscriber.

35. (Original) The system of claim 30, further comprising:

a second directory service integrated with the second application for providing access to application-specific certificates for the second application.

36. (Original) The system of claim 29, wherein the second certification authority is further configured to revoke the second application-specific certificate of the subscriber in response receiving notice of the registration authority revoking a certificate of the subscriber.

37. (Original) The system of claim 36, further comprising:

a second directory service integrated with the second application for providing access to application-specific certificates for the second application, wherein the second directory service comprises a certificate revocation list for storing an indication of the revoked application-specific certificate.

38. (Original) The system of claim 29, further comprising:

an application-specific registration authority integrated with the second application for registering subscribers and, in response to a subscriber being registered, instructing the second certification authority to issue an application-specific certificate to the subscriber.

39. (Original) A system for PKI-enabling a plurality of applications, the system comprising:

- an application-specific certification authority integrated with each application, the application-specific certification authority for issuing application-specific certificates;
- a registration monitoring component integrated with each application-specific certification authority, the registration monitoring component for receiving notice from a registration authority of registration of subscribers; and
- a certificate issuance component integrated with each application-specific certification authority, the certificate issuance component for issuing an application-specific certificate to each subscriber registered by the registration authority.

40. (Original) The system of claim 39, further comprising:

- a revocation monitoring component integrated with each application-specific certification authority, the revocation monitoring component for receiving notice from a registration authority of revocation of subscribers' certificates; and
- a certificate revocation component integrated with each application-specific certification authority, the certificate revocation component for revoking the application-specific certificate of each subscriber for which a certificate is revoked by the registration authority.

41. (Original) A computer program product for PKI-enabling an application, the computer program product comprising:

- program code for integrating the application with an application-specific certification authority for issuing application-specific certificates;

program code for receiving notice of a master certification authority issuing a master certificate to a subscriber; and

program code for issuing to the subscriber an application-specific certificate corresponding to the master certificate, the application-specific certificate for use by the application.

42. (Original) The computer program product of claim 41, further comprising:

program code for integrating the application with a directory service for providing access to application-specific certificates for the application.

43. (Original) The computer program product of claim 42, wherein the directory service comprises one of a lightweight directory access protocol (LDAP) service, an X.500 directory, and a database.

44. (Original) The computer program product of claim 42, wherein the directory service comprises a certificate repository, and wherein issuing comprises:

program code for storing the application-specific certificate in the certificate repository of the directory service.

45. (Original) The computer program product of claim 41, further comprising:

program code for receiving notice of the master certification authority revoking the master certificate of the subscriber; and

program code for revoking the application-specific certificate of the subscriber corresponding to the revoked master certificate.

46. (Original) The computer program product of claim 45, wherein revoking comprises:

program code for storing an indication of the revoked application-specific certificate in a certificate revocation list.

47. (Original) The computer program product of claim 41, further comprising:  
program code integrating the application with a registration authority for registering subscribers and revoking subscribers' certificates;  
program code for, in response to a subscriber being registered, issuing an application-specific certificate to the subscriber; and  
program code for, in response to a subscriber's certificate being revoked, revoking the application-specific certificate of the subscriber.

48. (Original) The computer program product of claim 41, wherein the master certificate and the application-specific certificate are each associated with a separate public key and a separate private key, and wherein issuing comprises:

program code for encrypting the private key associated with the application-specific certificate using the public key associated with the master certificate.

49. (Original) The computer program product of claim 48, further comprising:  
program code for, in response to the subscriber successfully authenticating with an authentication service using the master certificate:  
program code for decrypting the private key associated with the application-specific certificate using the private key associated with the master certificate; and  
program code for authenticating the subscriber for the application using the decrypted private key associated with the application-specific certificate.

50. (Original) A computer program product for PKI-enabling a plurality of applications, the computer program product comprising:  
program code for integrating a first application with a first certification authority for issuing certificates specific to the first application;

program code for integrating a second application with a second certification authority for issuing certificates specific to the second application;

program code for receiving notice of a registration authority registering a subscriber;

program code for issuing a first application-specific certificate to the subscriber using the first certification authority, the first application-specific certificate for use by the first application; and

program code for issuing a second application-specific certificate to the subscriber using the second certification authority, the second application-specific certificate for use by the second application.

51. (Original) The computer program product of claim 50, further comprising:

program code for integrating the first application with a first directory service for providing access to application-specific certificates for the first application.

52. (Original) The computer program product of claim 51, wherein the first directory service comprises a certificate repository, and wherein issuing a first application-specific certificate comprises:

program code for storing the first application-specific certificate in the certificate repository of the first directory service.

53. (Original) The computer program product of claim 50, further comprising:

program code for receiving notice of the registration authority revoking a certificate of the subscriber;

program code for revoking the first application-specific certificate of the subscriber using the first certification authority; and

program code for revoking the second application-specific certificate of the subscriber using the second certification authority.

54. (Original) The computer program product of claim 53, wherein revoking the first application-specific certificate comprises:

program code for storing an indication of the revoked application-specific certificate in a certificate revocation list.

55. (Original) The computer program product of claim 50, further comprising:

program code for integrating the first application with an application-specific registration authority for registering subscribers; and

program code for, in response to a subscriber being registered by the application-specific registration authority, issuing an application-specific certificate to the subscriber using the first certification authority.

56. (Original) The computer program product of claim 51, further comprising:

program code for integrating the second application with a second directory service for providing access to application-specific certificates for the second application.

57. (Original) The computer program product of claim 56, wherein the second directory service comprises a certificate repository, and wherein issuing the second application-specific certificate comprises:

program code for storing the second application-specific certificate in the certificate repository of the second directory service.

58. (Original) The computer program product of claim 50, further comprising:

program code for integrating the second application with an application-specific registration authority for registering subscribers; and

program code for, in response to a subscriber being registered by the application-specific registration authority, issuing an application-specific certificate to the subscriber using the second certification authority.

program code for, in response to a subscriber's certificate being revoked, revoking the application-specific certificate of the subscriber using the second certification authority.

59. (Original) A computer program product in a computer system for PKI-enabling a plurality of applications, the computer program product comprising:

program code for integrating each of a plurality of applications with an application-specific certification authority, the application-specific certification authority for issuing application-specific certificates;

program code for receiving notice of a registration authority registering subscribers; and

program code for issuing a corresponding application-specific certificate to each subscriber registered by the registration authority.

60. (Original) The computer program product of claim 59, further comprising:

program code for receiving notice of the registration authority revoking certificates of one or more subscribers; and

program code for revoking the application-specific certificate of each subscriber for which a corresponding certificate was revoked by the registration authority.